



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
03.03.2021 Bulletin 2021/09

(51) Int Cl.:
B60L 53/22 ^(2019.01)
H02J 3/26 ^(2006.01)
H02M 7/66 ^(2006.01)
B60L 53/63 ^(2019.01)
H02M 7/02 ^(2006.01)

(43) Date of publication A2:
24.02.2021 Bulletin 2021/08

(21) Application number: **20190808.4**

(22) Date of filing: **13.08.2020**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **13.08.2019 NO 20190978**

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(54) **A DC CHARGING DEVICE FOR AN ELECTRIC VEHICLE AND FOR PROVIDING POWER MANAGEMENT OF A CONNECTED GRID**

(57) A method and power management assembly 10 for providing DC charging or discharging of an Electric Vehicle. The power management assembly is connected to a 3-phase AC power grid and to a DC charging port of the Electric Vehicle. It comprises power converters 20 that can be controlled to load the three phases of the AC grid individually to adjust for varying available capacity

on each AC phase and/or unbalanced loads of the AC phases. The power management assembly 10 is a bi-directional charger in that it can also feed power from the battery of the Electric Vehicle to the AC grid and to control the current delivered to each phase individually to compensate for possible unbalanced phase loads.

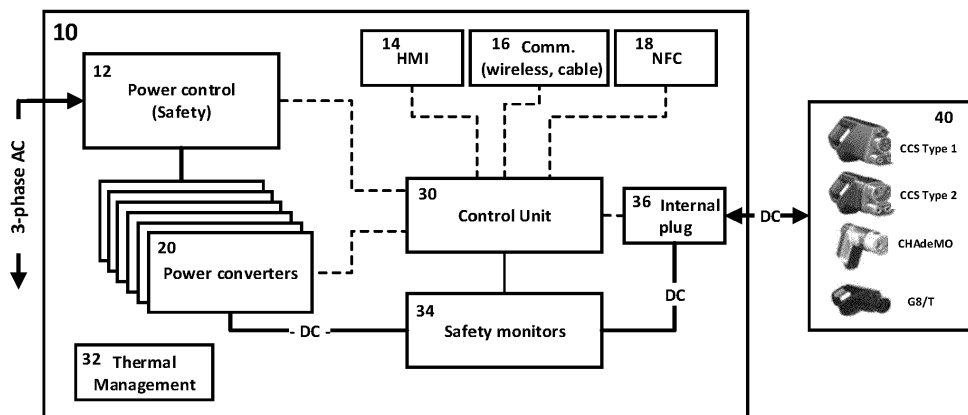


Figure 3



EUROPEAN SEARCH REPORT

Application Number
EP 20 19 0808

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2012/128626 A2 (ABB BV [NL]; ROBERS EGBERT WOUTER JOGHUM [NL] ET AL.) 27 September 2012 (2012-09-27) * figures 1,3,5,6 * * page 2, line 24 - page 3, line 22 * * page 11, line 8 - line 21 * * page 3, line 29 - line 32 * * page 4, line 19 - line 21 * * page 4, line 1 - line 6 * * page 10, line 4 - line 6 * -----	1-12	INV. B60L53/22 B60L53/63 H02J3/26 ADD. H02M7/02 H02M7/66
X	US 2018/159360 A1 (ENTHALER ACHIM [DE] ET AL) 7 June 2018 (2018-06-07) * figures 1-3 * * pages 1,28-35 * -----	1-12	
A	D. SREENIVASARAO ET AL: "Neutral current compensation in three-phase, four-wire systems: A review", ELECTRIC POWER SYSTEMS RESEARCH, vol. 86, 1 May 2012 (2012-05-01), pages 170-180, XP055767317, AMSTERDAM, NL ISSN: 0378-7796, DOI: 10.1016/j.epsr.2011.12.014 * figures 3,10-12 * * paragraphs [0011] - [0013], [0015], [0030] - [0033] * -----	1-12	TECHNICAL FIELDS SEARCHED (IPC) B60L H02M H02J
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 January 2021	Examiner Gücin, Taha
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 20 19 0808

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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